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   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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CAPITAL STRUCTURE DETERMINANTS: CRITICAL REVIEW FOR SELECTED INDIAN COMPANIES

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ABSTRACT

Capital structure is one of the most significant features of organizational finance and should be managed efficiently. The present study is conducted with an OLS regression method, to identify major determinants of capital structure. The determinants are selected with two prominent theories of capital structure, static trade-off theory and pecking order theory. For conducting the present study, annual reports from 55 companies, listed in stock exchange in India, is collected for last 6 years i.e. from 2006 to 2011. A total number of 330 observations were made. OLS regression for panel data with cross section random effect is run with two equations i.e. total debt to market value of companies and long term debt to market of companies. Analysis shows negative impact of agency cost on total debt ratio of Indian companies. Tax rate is positive only on long term debt and non-debt tax shields are negative on total debt ratio. There is no significant impact of bankruptcy and profitability in determining leverage ratios, while total and long term debt ratios are significantly determined by firm size. Long term debt ratios are significantly determined by firm size. Collateral volume of assets positively influence only total debt ratio while industry characteristic has been found to be a significant determinant of debt ratio.

KEYWORDS

agency cost, bankruptcy cost, profitability, capital structure and tax shield.

INTRODUCTION

A balanced and effective capital structure is of a great concern, in the area of corporate finance. An appropriate capital structure will lead to increased profitability or decreased risk and thus, high share-holders and customer's value. Capital structure is metrics of various probable funds that constitute the assets of the company e.g. higher the proportion of debt in capital structure means higher financial leverages. A wise capital structure decision enables a firm to allocate and control risk.

Previous researches on the topic have aimed to find out:

- The influences of capital structure on firm
- The probable alternatives of capital structure, and
- The determinants of capital structures (Sayeed, 2011)

The present study falls in the last category. In the present study, OLS and Tobit regression have been run on yearly data, ranging from year 2006 to 2011. Prime objective of this study is to investigate the determinants of capital structure in Indian companies. This study differs from other previous studies, as in previous studies, industries like heavy engineering, software technology, telecommunication, oil industries were ignored with some logics. In the present study, author has incorporated all the above mentioned sectors.

In order to simplify, the present study is organized into six sections e.g. literature review, hypothesis, data collection, methodology, result and conclusion.

OBJECTIVE OF THE STUDY

a. To identify the determinants of capital structure in the defined sectors of Indian economy
b. To identify the main determinants of capital structure that influence the financing decision of choice of the capital structure in the economy.
c. To explain the relationship between leverage and capital structure determinant (if possible)

SCOPE OF THE STUDY

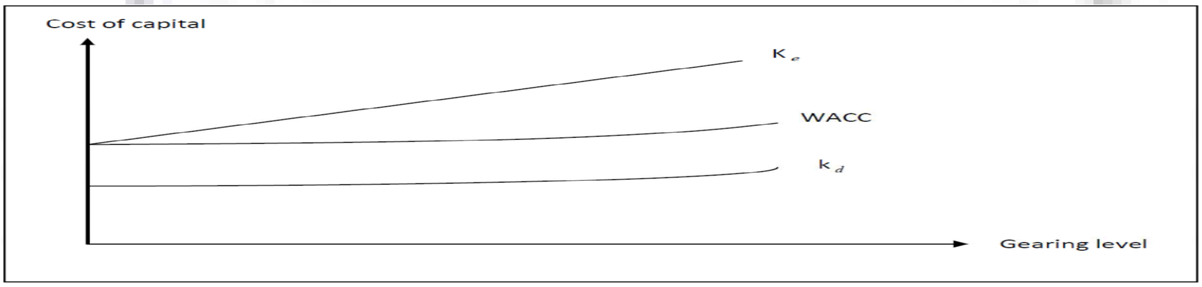
This study will try to identify and analyze the determinants of capital structure in Indian economy. In the present analysis, several sectors have been considered e.g. heavy engineering, which have been ignored in the previous studies. The focus of this study is to cover all the major aspects of the topic but preliminary it tried to determine the capital structure of different sectors listed in Security Exchange Board of India, Mumbai, which will help managers to take better financial decision for their organization. Further, this study can also help creditors, to minimize their risk.

THEORIES OF CAPITAL STRUCTURE

Tekar, Tasseren and Tukel (2009) have examined the most significant determinants of capital structure (Dissanayake, 2012). However, in 1958, Modigliani and Miller have pioneered the theory of capital structure, with detonated debate in not only academic but corporate area as well. A general consensus has been established then that the capital structure has a significant impact on firm value (Akhtar, 2005).

One very prime reason, why companies should introduce the capital structure, is to bring down the cost of finance. Here, it does mean that the cost of debt (k_d) is less than the cost of equity (k_e). One remarkable aspect hare is that additional amounts of debt would increase both the cost of equity (k_e) and cost of debt (k_d). In spite of this; since the k_d is significantly lower than the k_e the WACC will initially decline (Dissanayake, 2012).

FIGURE 1



Source: *Association of Business Executives.*

However, theories of capital structure can be divided into two main thoughts; static trade-off theory and pecking order theory. Static trade-off theory advises the firms' decision about capital structure with the help of trade-off between cost and revenue having debt. This debt results in tax deductible and consequently, reduced tax burden. However, it has one major cost i.e. bankruptcy cost (Mazur, 2007). Further, agency cost is also an important cost (Jensen and Mackling, 1976, Myers, 1977), which associates with negating the conflict of interest between, creditors and shareholders (Sayeed, 2011).

Picking order theory describes that managers select capital with the following preferences like internal finance, debt, equity (Myers and Majluf, 1986) with the assumption that managers do not seek any optimal level of leverage. It believes that debt is collected only when internal sources of funds are not adequate.

Based on these two theories, different studies have developed a set of determinants of debt ratio of the firm and have been empirically tested (Sayeed, 2011). Major studies are Akhtar (2005), Mazur (2007), Kim, Heshmati and Aoun (2006), Eldomiaty (2007) and Sayeed (2011) etc.

CAPITAL STRUCTURE DETERMINANTS

Leverage ratios have been used to represent the capital structure of a firm in maximum studies. There are differences in selecting the numerator and denominator of the leverage ratio. In the previous researches, some have used long term debt (Chkir and Cosset, 2001) while, rest opted total debt as the numerator (Bevan and Danbolt, 2002). In the case of denominator, some have used market value of firm while rest has used book value of the firm for the study purpose (Graham and Harvey, 2001 and Mazur, 2007). In the present study, researcher has used two measures as a proxy of capital structure. The leverage is defined as:

$$LTDM = \frac{ltd}{ltd + mve}$$
$$TDM = \frac{td}{td + mve}$$

Where:
LTDM:Long term debt measure
TDM: Total debt measure
ltd: Long term debt
mve: Market value of equity
td: Total debt

It has been observed that debt is associated with the Agency cost. Agency cost is widely expressed through, three proxy variable (Akhtar, 2005). The given ratio (known as agency cost), treated as TW in literature was proposed in 1988 by Titman and Wessels:

$$TW = \frac{tdcashandmarketablesecurities}{3\ yearaverageasset}$$

Lehn and Poulson (1989) proposed another variable (cited by Akhtar, 2005, re-cited by Sayeed, 2011) which represents the free cash flow of the firm.

$$LP = \frac{EBIT + dept + Amo - tax - Div}{10\ 000}$$

Where,
EBIT: earnings before interest, tax and abnormal profit
dept: depreciation expenses
Amo: amortization reported separately from depreciation
Tax: total tax paid
Div: total dividend paid

Jensen, Solberg and Zorn (1992) and Mehran (1992) (cited by Akhtar, 2005) have proposed another variable for agency cost (re-cited by Sayeed, 2011), which is given as below:

$$JM = \frac{\Delta TotalAssets}{TotalAssets}$$

Where, ΔTotal Assets $_t$– total asset$_{t-1}$

It has been observed that leverage reduces if enough agency cost exists in the organization because of the inverse relationship between these two variables. Therefore, it is expected that TW, LP and JM does have negative impact, on the leverage. In the meantime, debt level should be minimum when, bankruptcy cost is high. High volatility, in earnings of a firm indicates the presence of bankruptcy cost (Sayeed, 2011). Akhtar (2005) has used a proxy variable, as the standard deviation of first difference in earnings and the same, has been considered in the present study. So, there should be negative relationship between BC and leverage.

$$BC = \frac{StandarddeviationoffirstdifferenceinEBIT}{TotalAssets}$$

So, our first hypothesis is:

Hypothesis 1: TW, LP, JM and bankruptcy cost should have negative impact on the leverage

As per the trade-off theory, debt reduces the tax liability of the firm. So, if the tax rate is high, firm should have high debt ratio, to reduce the tax load. An effective tax rate, is defined in the literature as (Sayeed, 2011):

$$TAX = \frac{TaxPaid}{profitbeforetax}$$

However, according to De Angelo and Masulis (1980), non-debt tax shields can serve as an alternative, to debt tax shield (Sayeed, 2011). This shield is created by depreciation and is non-cash item which is allowed for tax deduction. If, in any organization, high non-debt tax shield exists, then it will result in reduced tax burden. In this case, a firm will require less amount of debt, to reduce its tax liability. So, the relationship between leverage and non-debt tax shield would be negative:

$$NDTS = \frac{Totalannualdepreciationexpense}{Totalasset}$$

Hence, our second hypothesis is:

Hypothesis 2: There is positive relation between leverage and effective tax rate and higher non-debt tax shields allows, firms to maintain lower leverages

Another variable, that has been widely used in the previous studies is, firm size (Mira, 2005) and (Akhtar, 2005). Bankruptcy risk can be reduced by diversifying the business, if the firm is larger in size. With the same thought, researcher hasassumed a positive relation between firm size and debt ratio. Size means in (total assets). **Hence, our third hypothesis is:**

Hypothesis 3: The bigger the firm, the lower would be the leverage ratio.

Tangible asset provides collateral value, to the assets and thus, they become a determinant of debt ratio, because, it can be used as collateral, to enable firms,to borrow at favourable terms. Following variable were used by different authors e.g. Asktar (2005) and Mazur (2007) as the collateral value of the assets:

$$Collateralvalueofasset = \frac{FixedAsset}{Totalasset}$$

So, our forth hypothesis is:

Hypothesis 4: There is positive relation between fixed asset ratio and debt ratio.

As per the pecking order theory of capital structure, all the firms, with more profit, prefer internal sources of financing, than external sources. So, more profitable firms will have less debt level than the low profitable firms. Some authors like Akhtar (2005) and Mazur (2007) measured profitability by net profit, by sales ratio while, others like Mira (2005) have used EBIT, to total asset ratio. In the present study, researcher continued the study, following the method used by Akhtar (2005) and Mazur (2007) with a logic that net profit figure, is more influenced in managerial decisions rather than EBIT:

$$Prof = \frac{NetIncome}{TotalSales}$$

As we discussed, a more profitable firm generally prefers, internal sources of funding rather than external sources, so, **our fifth hypothesis is:**

Hypothesis 5: Debt ratio is negatively related with profitability

DATA COLLECTION

All the data were collected from Indian companies, listed in Security Exchange Board of India, Mumbai. All the selected companies are big giant in the Indian economy. The values are collected from audited and published annual books of the organizations. Annual reports are collected from the websites, some were not available, so, the researcher has personally, requestedthe organizations for the same. All the annual reports are varied from financial year 2006 to 2011 from the different sectors of the economy. These sectors are; banking with 19 companies, food and health with 2 companies, machinery and infrastructure with 6 companies, minerals with 6 companies, oil and gas with 7 companies, software with3, steel with 5, telecommunication with 2 and utility with 5 companies. Total number of organizations considered for the analysis is 55. TW is average of 3 year's total asset, so additionally annual reports from 2004 have been collected for the sake of study. The selected sectors and number of the organizations are shown in table one:

TABLE 1: SELECTION OF THE SAMPLE

Sector	No. of Organizations selected	No. of years for analysis	No. of observations made
Banking	19	6	114
Food and health	2	6	12
Machinery and Infrastructure	6	6	36
Minerals	6	6	36
Oil and Gas	7	6	42
Software	3	6	18
Steel	5	6	30
Telecommunication	2	6	12
Utility	5	6	30
Total	**55**	**6**	**330**

The descriptive statistics of the variables are listed in table two

TABLE 2: DESCRIPTIVE STATISTICS OF THE VARIABLES

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
TDM	0.611	0.699	0.991	-0.071	0.310
LTDM	0.3660	0.301	0.999	0.000	0.335
TW	0.043	0.008	0.912	-0.002	0.102
LP	5548.3	2669.2	66076.49	-22119.06	9979.94
JM	-0.017	0.042	0.922	-8.988	0.708
NDTS	0.036	0.030	0.209	0.000	0.029
BC	0.026	0.013	0.470	0.000	0.048
PROF	-1.401	0.020	1.480	-381.701	21.377
SIZE	20.142	20.227	23.560	16.489	1.1332
CVA	0.543	0.479	8.958	0.0122	0.695

A correlation matrix has been obtained and shown in table no. 3 to examine multi-collinearity among the variables.

TABLE 3: COLLINEARITY MATRIX

Variables	TDA	TDM	TW	LP	JM	TAX	NDTS	BC	PROF	SIZE	CVA
TDA	1.00	0.21	-0.06	-.079	-0.04	-0.04	0.18	0.13	-0.12	-0.19	0.53
TDM	0.21	1.00	-0.33	-0.36	0.06	-0.09	-0.05	-0.16	-0.09	-0.06	-0.02
TW	-0.03	-0.30	1.00	0.03	0.02	0.09	-0.15	-0.06	0.04	0.05	-0.03
LP	-0.14	-0.32	0.07	1.00	0.06	0.15	0.12	-0.07	0.05	0.57	0.06
JM	-0.79	0.06	0.03	0.04	1.00	0.01	-0.21	-0.12	0.01	0.26	-0.36
TAX	-0.04	0.00	0.09	0.12	0.03	1.00	-0.04	-0.02	0.01	0.02	-0.04
NDTS	0.13	-0.03	-0.16	0.12	-0.23	-0.03	1.00	0.07	0.07	-0.25	0.44
BC	0.13	-0.21	-0.07	-0.05	-0.10	-0.01	0.08	1.00	-0.01	-0.11	0.10
PROF	-0.13	-0.16	0.05	0.04	0.00	0.01	0.05	-0.02	1.00	0.05	-0.05
SIZE	-0.25	-0.04	0.05	0.42	0.22	0.04	-0.24	-0.11	0.04	1.00	-0.21
CVA	0.49	-0.03	-0.02	0.07	-0.53	-0.06	0.43	0.09	-0.04	-0.20	1.00

Table 3, analysis shows that multi-collinearitytest is not significant for this analysis, so the researcher will not consider it again for the analysis purpose.

METHOD OF THE ANALYSIS

In the present study, Multiple OLS (Ordinary Least square) regression method was run to measure the impact of explanatory variables on leverage ratio for the selected companies. It is obvious from the previous studies like Mera (2005) that panel data can control, heterogeneity among the cross sections and time series data methodologyhence, panel data methodology is used in the present study because of the nature of data used for the analysis. Further, cross sectional random effect model is used since, the random effect model provides more accurate estimation of p-values. Tobit regression method is used to verify the results obtained by OLS randon effect model. Rajan and Zingales (1995), Akhtar (2005) and Sayeed (2011) used Tobit regression in their studies of capital structure.

The model for the study is as below:

$$Leverage = \alpha + \beta_1 TW + \beta_2 LP + \beta_3 JM + \beta_4 BC + \beta_5 TAX + \beta_6 NDTS + \beta_7 PROF + \beta_8 SIZE + \beta_9 CVA + \beta_{10} Dummy_1 + \beta_{11} Dummy_2 + \beta_{12} Dummy_{13} + \beta_{13} Dummy_{14} + \varepsilon \text{ ----- (1)}$$

For the representation of the leverage, LTDM and TDM are used as the dependent variable. When TDM is proxy for the leverage in equation (1) is transferred to:

$$LTDM = \alpha + \beta_1 TW + \beta_2 LP + \beta_3 JM + \beta_4 BC + \beta_5 TAX + \beta_6 NDTS + \beta_7 PROF + \beta_8 SIZE + \beta_9 CVA + \beta_{10} Dummy_1 + \beta_{11} Dummy_2 + \beta_{12} Dummy_{13} + \beta_{13} Dummy_{14} + \varepsilon \text{ ----- (2)}$$

While, when TDM is used, the equation will be:

$$TDM = \alpha + \beta_1 TW + \beta_2 LP + \beta_3 JM + \beta_4 BC + \beta_5 TAX + \beta_6 NDTS + \beta_7 PROF + \beta_8 SIZE + \beta_9 CVA + \beta_{10} Dummy_1 + \beta_{11} Dummy_2 + \beta_{12} Dummy_{13} + \beta_{13} Dummy_{14} + \varepsilon \text{ ----- (3)}$$

Table no. 4 shows the summary of the hypothesis and expected sign of the coefficients of the each variables:

TABLE 4: EXPLANATORY VARIABLES AND IMPACTS ON THE LEVERAGES

Theories	Explanatory variable	Expected Impact
Static trade-off theory Variable	Agency Cost	
	TW	Negative
	LP	Negative
	JM	Negative
	Other costs:	
	Bankruptcy Cost (BC)	Negative
	Effective Tax Rate (Tax)	Positive
	Non-Debt tax Shield (NDTS)	Negative
Pecking order theory Variable	Profitability (PROF)	Negative
	Size	Positive
	Collateral Value of Assets (CVA)	Positive
	Dummy variables for organizations	Positive / Negative

RESULTS OF ANALYSIS

TABLE 5: OLS REGRESSION RESULT (WHERE LTDM IS DEPENDENT VARIABLE)

Variable	Coefficient	t-statistic	Prob.
C	-0.746467	-1.927243	*0.0653
TW	-0.066967	-0.541219	0.5775
LP	-2.20E-06	-1.813173	*0.0710
JM	-0.008978	-0.698869	0.4986
TAX	0.027492	2.191509	**0.0292
NDTS	-0.144256	-0.301124	0.8012
BC	0.112396	0.774219	0.4510
PROF	1.37E-05	0.050176	0.9731
SIZE	0.069842	3.101456	***0.0031
CVA	0.014332	0.772098	0.4762

*** AT 1% LEVEL OF SIGNIFICANT
** AT 5% LEVEL OF SIGNIFICANT
*AT 10% LEVEL OF SIGNIFICANT

TABLE 6: OLS REGRESSION RESULT (WHERE TDM IS DEPENDENT VARIABLE**)**

Variable	Coefficient	t-statistic	Prob.
C	-0.613316	-1.541321	0.1364
TW	-0.223146	-3.784516	***0.0004
LP	-2.81E-06	-4.114778	***0.0001
JM	-0.017662	-2.724436	***0.0069
TAX	0.001648	0.178806	0.8342
NDTS	-1.286434	-2.076344	**0.0359
BC	-0.143252	-1.173168	0.2306
PROF	5.10E-05	0.347965	0.7469
SIZE	0.058740	2.796545	***0.0049
CVA	0.013783	0.800487	**0.4293

*** AT 1% LEVEL OF SIGNIFICANT
** AT 5% LEVEL OF SIGNIFICANT
*AT 10% LEVEL OF SIGNIFICANT

OLS regression analysis result is given in table 5 where LTDM, is dependent variable to proxy the leverage while tale 6 shows the OLS regression analysis result where TDM, is dependent variable, to proxy the leverage. After analyzing these two tables, it is now clear the all of the three agency cost variables have negative coefficient, as the researcher has predicted before. In determining the TDM only, all the variables were significant at 1% level of significance. It shows that firm reduces the total debt in the case of intensified agency cost. However, long term debt ratio is unaffected which means, only short term debt should reduce agency cost.

When we discuss our first hypothesis, it is: ***TW, LP, JM and bankruptcy cost should have negative impact on the leverage.*** Now, first part of this hypothesis i.e. higher agency cost should have reduced leverage, can be accepted but only if we consider total debt as the leverage ratio. If we consider LTDM, there is no sufficient evidence to support this hypothesis. Akhtar (2005) and Sayeed (2011) have also reported the same result in their studies. Further, bankruptcy cost should also have negative impact on the leverage as per the prediction. However, regression result in both tables is positive. So, hypothesis for bankruptcy cost is rejected.

Next hypothesis is about the effective tax rate and non-debt tax shield. In the hypothesis researcher has assumed that ***there is positive relation between leverage and effective tax rate and higher non-debt tax shields allows firms to maintain lower leverages.***Both the tables show positive coefficient as expected, however, it is more relevant in the case of LTDM, and not in the case of TDM, which means, with a higher effective tax rate, firms can replace long term debt with short term debt, because of high interest cost associated with long term debt, to reduce tax burden (Sayeed, 2011). In the case of non-debt tax shield, ithas been predicted that it should have negative relation with leverage. The result in both tables confirms the prediction; however, it is significant at 5% level of significance in equation number two. Thus, it clearly indicates that a firm can reduce its' short term debt only when it's non-cash expenditure e.g. depreciation are high. Hence, it is accepted only with total debt ratio. In the previous studies like Akhtar (2005) and Mira (2005), NDTS, was insignificant determinant.

According to next hypothesis, there is positive and significant relation between size of the firm and leverage ratio. Researcher has assumed that ***the bigger the firm, the lower would be the leverage ratio***with an argument that bigger firms can reduce their risk with diversified business. The result from the analysis confirms the prediction of the researcher. This result is consistent with the previous studies like Mira (2005) and Sayeed (2011).

Further, the researcher has assumed that CVA should have a positive relation on the leverage of the firm; ***there is positive relation between fixed asset ratio and debt ratio.*** The result in table 5 shows positive coefficient at 5% level of significance. So, this result supports our hypothesis. Result in table number 6 also supports our prediction.

Last hypothesis is about the profitability. According to this, the researcher has assumed that ***Debt ratio is negatively related with profitability.***But the results, in the both tables show, that there is no enough evidence, to support this. The result (coefficient) is insignificant and it means that profitability is not significant determinant or does not have any significant impact on capital structure decision. Akhtar (2005) and Mazur (2007) have found significant and negative coefficient of this variable and it support then pecking order theory.

TABLE 7: TOBIT REGRESSION RESULTS WITH DEPENDENT VARIABLES LTDM AND TDM

Significance is shown in z-statistics

Variables	Coefficient for LTDM	z-statistics	Coefficient for TDM	z-statistics
C	0.289126	0.8145185	-0.142935	-0.444787
TW	-0.402281	**-2.195263	-0.674987	***-4.453441
LP	-8.19E-06	***-4.237101	-1.36E-05	***-7.746476
JM	0.035631	1.074442	0.004923	0.176364
TAX	-0.004476	-0.141265	0.001431	0.041359
NDTS	-1.145632	-1.491256	-1.165368	*-1.815892
BC	-0.007768	-0.034556	-0.876776	***-2.778634
PROF	-0.001489	*-1.895519	-0.000756	-1.412251
SIZE	0.033667	**2.074251	-0.064045	***4.043302
CVA	0.061337	*1.777643	0.040123	1.409234

*** AT 1% LEVEL OF SIGNIFICANT
** AT 5% LEVEL OF SIGNIFICANT
*AT 10% LEVEL OF SIGNIFICANT

As per the table 7, regression result, Tobit models and the OLS random effect model are very similar. Agency cost variable like TW and LP have been reveals to have significant negative impact. Further, TAX and NDTS are also negative and found insignificant. BC, is found significant here for the total debt. PROF and CVA do not have any significant coefficient while SIZE has been found significant.

CONCLUSION

In the present study, an advance tool for analysis is applied i.e. OLS regression method. The objective was to know the major determinants of the capital structure in listed and selected Indian companies. This study is based on two prominent theories of the capital structure, static trade-off theory and pecking order theory. For the determination of the possible major capital structure determinants, previous studies have been considered. For the analysis, OLS regression model for panel data with cross section random effect was run. For the sake of the study, there were two equations also, total debt to market value as leverage ratio in one equation while, long term debt to market value as leverage ratio in another. As per the result, it is clear that agency cost is negative but tax rate is positive while non-debt tax shields are again negative on leverage ratio. Bankruptcy cost and profitability are irrelevant in the determination of leverage ratio while form size is positive. Collateral value of the asset has positive influence on total debt ratio only.

The researcher strongly believes that this result may be more reliable, if number of observation can be increased. Again, he has strong believes that managers' personal attitude does have significant impact over the capital structure and it cannot be analyze easily. So, there is adequate space for further studies, with increased number of observation and variables. In the study, human consequences can also be examined, if possible.

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